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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/026,541	12/27/2001	Seung Gyu Lee	K-0378	9473

7590 11/07/2002
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EXAMINER

DOWLING, WILLIAM C

ART UNIT PAPER NUMBER

2851

DATE MAILED: 11/07/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Applicant N .

10/026,541

Applicant(s)

LEE, SEUNG GYU

Examiner

William C. Dowling

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 27 December 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 27 December 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1-2, 5-11, 14 rejected under 35 U.S.C. 103(a) as being unpatentable over Butterworth et al. in view of Sawai et al.

Butterworth et al. disclose an imaging apparatus comprising:

- a light source (12) including an elliptical reflector (30);
- a color wheel (14) formed as a disc;
- an optical train (16) including a light pipe (rod lens) (36), the light pipe may have a constant cross section (Figure 6);
- a prism (44);
- a polarizing means for passing light of a single polarization to the prism (See Figure 9);
- a projection lens (28) and illumination lenses (48, 50).

Butterworth et al. do not teach the use of polarization conversion means.

The use of polarization conversion means in image projectors is old and well known. Sawai et al. exemplifies such a system including polarization splitting films (25a) and half wave plates (26) for rotating one of S and P polarizations.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of Butterworth et al. by the substitution of a polarization conversion system, as taught by Sawai et al., for a polarization film in order to make use of the entire illumination beam and avoid light losses.

3. Claims 3-4 are is rejected under 35 U.S.C. 103(a) as being unpatentable over Butterworth et al. and Sawai et al. as applied to claim 1 above, and further in view of Gleckman.

Butterworth et al. and Sawai et al. teach the invention substantially as claimed but do not teach the use of a cylindrical filter. Butterworth also teaches the use of a mirror (20) in combination with filter means.

Gleckman teaches the use of cylindrical color filter for forming sequential color light beams.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of

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Butterworth et al. and Sawai et al. by the substitution of a different known type of color filter, such as a cylindrical one as taught by Gleckman, within the optical train.

4. Claims 15-18, 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawai et al. in view of Butterworth et al.

Sawai et al. discloses an imaging apparatus in figure 17 comprising :

- a light source (111);

- a rod lens (112);

- polarization conversion means (115) having prisms and lens means;

- optical means (114b) for focusing the converted beams;

- a transmissive display means (121);

- a projection lens (122).

Sawai et al. also discloses a mirror (117) within the optical train to redirect the light beam. Relocation of this mirror to between the display panel and the projection lens is deemed an obvious rearrangement of parts. The use of polarizing plates sandwiching liquid crystal material is well known in the art and official notice is made of this fact

Sawai et al. does not teach the use of color filter means to provide sequentially colored light beams.

Butterworth et al. disclose an imaging apparatus comprising a color wheel (14) formed as a disc.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of Sawai et al. by the addition of color filter means in order to achieve a full color imaging system.

5. Claims 15, 19-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sawai et al. in view of Gleckman.

Gleckman teaches the use of cylindrical color filter for forming sequential color light beams.

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the device of Sawai et al. by the addition of a known type of color filter, such as a cylindrical one as taught by Gleckman, within the optical train in order to provide full color imaging.

6. Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Butterworth et al. and Sawai et al. as applied to claim 1 above, and further in view of Dove et al.

Butterworth et al. and Sawai et al. disclose the invention substantially as claimed but do not teach the placement of a quarter wave plate in between the polarizing prism and the reflective display.

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Dove et al. discloses the known placement of a quarter wave plate to correct for polarization distortions. (Column 3 Lines 16-29).

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combination of Butterworth and Sawai by the addition of a wave plate, as taught by Dove et al. in order to avoid introduced distortions.

7. Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Butterworth et al. and Sawai et al. as applied to claim 1 above, and further in view of Doany (5,863,125).

Butterworth et al. and Sawai et al. disclose the invention substantially as claimed but do not teach the placement of a polarization filter means between the optical system and the prism.

Doany teaches the placement of a polarizer (450) downstream from a polarization conversion optical system(420)

It would have been obvious to one of ordinary skill in the art at the time of the invention to modify the combination of Butterworth and Sawai by the addition of a polarizer, as taught by Doany in order to remove unwanted residual polarizations.

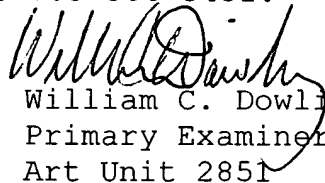
8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to William

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C. Dowling whose telephone number is 703-308-1287. The examiner can normally be reached on Mon.-Thurs.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Russ Adams can be reached on 703-308-2847. The fax phone numbers for the organization where this application or proceeding is assigned are 703-305-7723 for regular communications and 703-305-7723 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-306-3431.


William C. Dowling
Primary Examiner
Art Unit 2851

wcd
November 5, 2002